



Public Health Aspects of Bioterrorism Risk Assessment and Risk Management in Germany

Heinrich Maidhof
Federal Information Centre for Biological Security
Robert Koch Institute, Berlin Germany

DHS International Symposium on Bioterrorism Risk, 6-8 October 2009

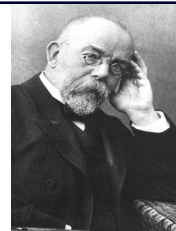


The Robert Koch Institute in History



Triangle, 1891 - 1900
1891 founded as the Royal Prussian
Institute for Infectious Diseases.
Robert Koch leads the Institute until
1904.

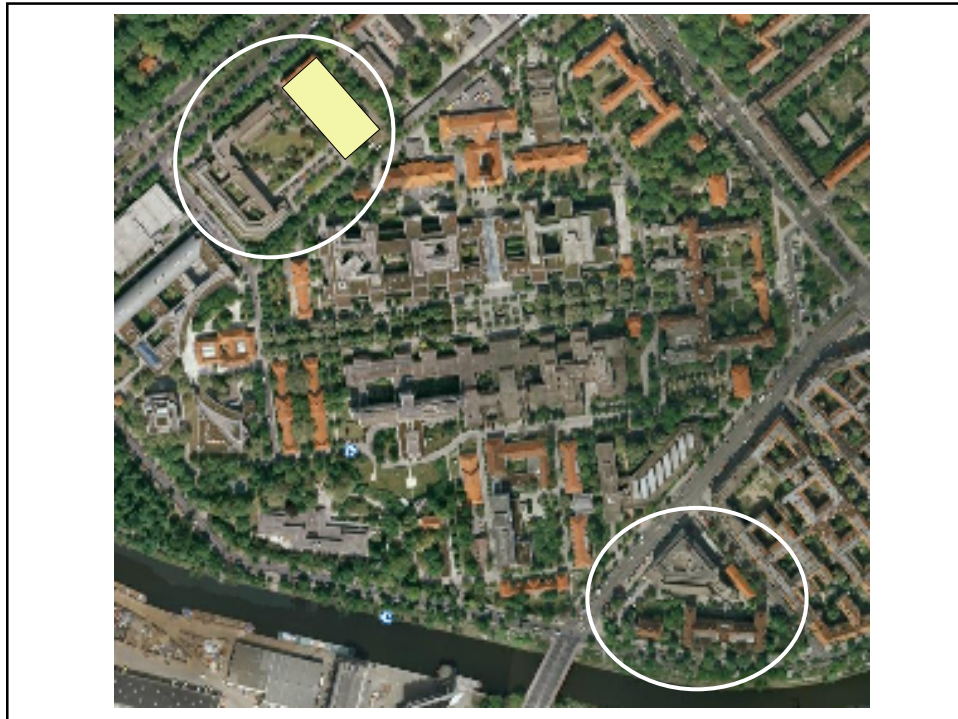
**Robert Koch 1843 -
1910**
co-founder of modern
bacteriology and hygiene



**and
today:**



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ROBERT KUCI INSTITUTE



Construction of a new BSL4 Laboratory at the RKI (2009-2013)



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The Robert Koch-Institute (RKI) in the framework of federal tasks

Federal Ministry of Health



Robert Koch-Institute
Senior Federal Authority
National Public Health Institute

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Numbers Facts

- **Staff: total** **about 1000**
 about 300 scientists
- **Budget:** **about 60 Mio Euro / Year**
- **About 50 projects funded by external agencies**
- **Several members affiliated with Berlin universities**
 (joint appointments)
- **Several millions visits of RKI-website per month:**

<http://www.rki.de>

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Main Tasks of the RKI

- Scientific advice on federal level in the field of control and prevention of infectious and chronic diseases
- **Central federal institution for prevention and detection of biological attacks**
- Executive authority in the fields of infection protection and stem cell law
- Applied research in the field of health related problems
- Several legal responsibilities related infectious substances (e.g. transport)

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Bioterrorist Attacks October 2001 Anthrax-Letters in USA



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Anthrax in Europe

**10.10.2001:
First suspected
Anthrax-letter in
Berlin (hoax)**



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Responsibilities in Germany for biological risk management (before 2001)



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Centre for Biological Safety

- **IBBS** **Federal Information Centre for Biological Safety**
- **ZBS 1** **Highly Pathogenic Viruses**
- **ZBS 2** **Highly Pathogenic Microbial Pathogens – Bacteria and Fungi**
- **ZBS 3** **Microbial Toxins**
- **ZBS 4** **Imaging Techniques - Rapid, Morphology-Based Diagnostics of Infectious Organisms**
- **(ZBS 5)** **BSL- 4 Laboratory**

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Federal Information Centre for Biological Security (IBBS)

- Scenario modelling from the perspective of the specificities of bioterrorist attacks
- Evaluation of the origin of disease outbreaks;
- Modes of dissemination, sample collection, detection;
- Establishment and development of information networks and cooperations;
- Coordination of measures for the defence against bioterrorist pathogens;
- Recommendations and guidelines for unusual epidemics;
- Assessment of needs for diagnostics, anti-infectious agents, vaccines and other pharmaceuticals;
- Establishment of databases on bioterrorism;
- Providing information to the general public;
- Providing information to the scientific sector;
- Providing information to the political decision makers;
- Health related aspects of the transport of infectious agents

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What is needed for a successful public health BT Risk assessment?

- Re-assessment of possible BT agents on national and international basis
- International Co-operation
 - Global Health Security Initiative (GHSI)
 - European Commission Services and Agencies
 - WHO, OIE, ECDC, NATO
- Early alerting procedures (medical intelligence)
 - e.g. GHSI project EAR

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New Threat & Risk assessment in Germany

Design and aim of the project:

- Continuing collection of data
- Interdisciplinary usable
- Identification of knowledge gaps
- *Basis for risk management*
- Information for decision makers

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New Threat & Risk assessment in Germany

New classification of pathogens/toxins as BW agents:

- Combines information from intelligence and health sector
- Independent on specific information of terrorist groups
- Threat assessment can be applied to all different types of terrorist groups or extremists

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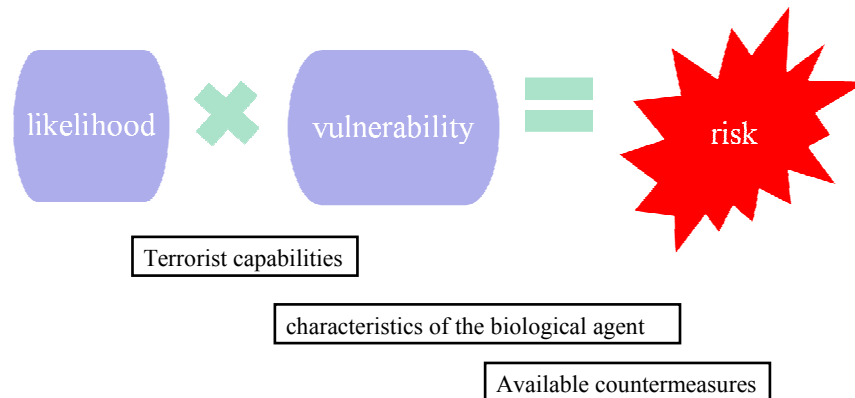
Definitions used for risk/threat assessment

Risk	Potential of some unwanted event to occur; function of the likelihood of the event and its consequences
Likelihood	Depends upon threat and vulnerability
Threat	Capability/intention of a terrorist to undertake actions
Vulnerability	Any weakness in an asset that can be exploited by a terrorist to cause damage

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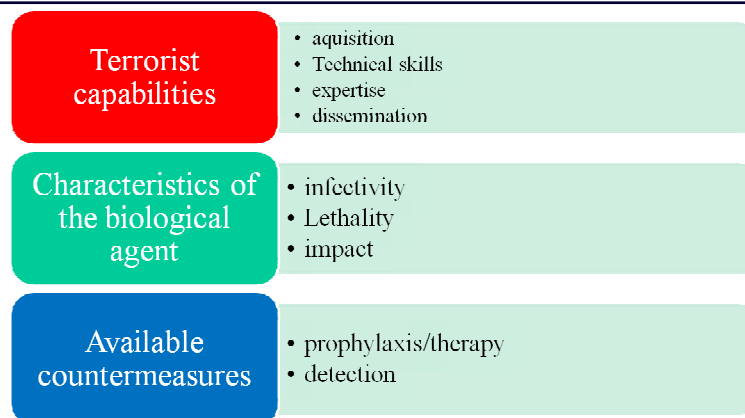
BT risk assessment



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BT Risk Assessment



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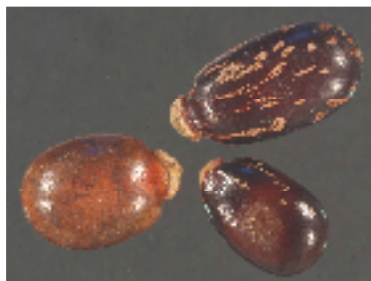
Ricin

Source: *Ricinus communis* (castor plant)

Ricinus communis



Seeds (1-5% Ricin)



Toxicity in humans:

injection: ca. 500 µg*

*assassination of G. Markov (1978)

oral ingestion: 10-20 seeds**

**containing > 4500 µg Ricin

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BT assessment: Rizin

• Acquisition	8 of 10
• Technical skills	8 of 10
• Expertise	8 of 10
• Dissemination	2 of 10
• Infectivity	2 of 10
• Lethality	8 of 10
• Impact	5 of 10
• Prophylaxis/therapy	5 of 10
• Detection	5 of 10

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Smallpox

- viral disease
- man to man transmissible!
- lethality 30 %
- no treatment!



- only proven countermeasure:
⇒ vaccination

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BT assessment: smallpox

• Acquisition	1 of 10
• Technical skills	2 of 10
• Expertise	1 of 10
• Dissemination	6 of 10
• Infectivity	10 of 10
• Lethality	8 of 10
• Impact	10 of 10
• Prophylaxis/therapy	5 of 10
• Detection	6 of 10

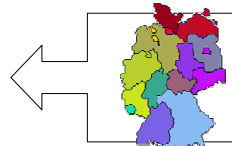
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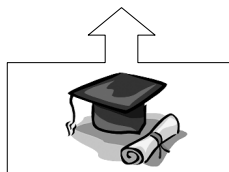
Smallpox Preparedness Plan



Federal government
Federal agencies



Länder



Science

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Permanent Working Group of the Competence and Treatment Centres



Competence-Centre

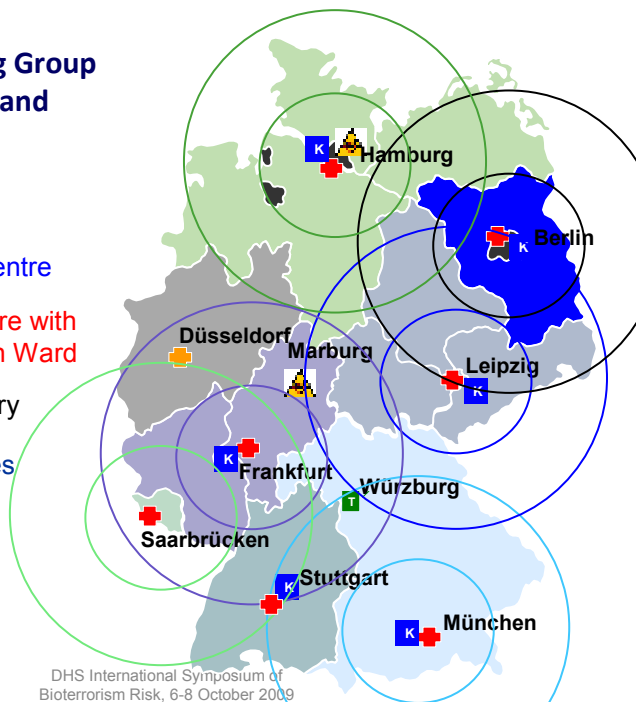


Treatment-Centre with
Special Isolation Ward

BSL 4 Laboratory



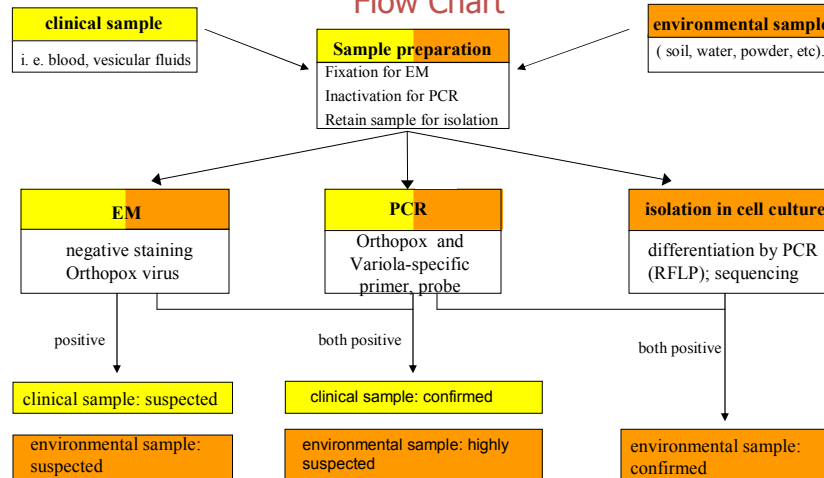
Training Courses



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Poxirus Diagnostics

Flow Chart



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Advanced Management of Biological Threats: AMBIT courses



Focus on issues such as:

- Handling of personal protective equipment
- Risk assessment
- Management of outbreaks caused by infectious agents (e.g. barrier methods, contact tracing, patient transport)
- Management of incidents caused by toxic agents (e.g. decontamination, sample management)
- Risk communication



International cooperation I: EU Health Security Committee

- **Plenary**
 - The plenary is comprised of high-level representatives of the Health Ministers of EU Member States authorised to take decisions and commitments with respect to preparedness planning and response in case of emergency
 - Meetings twice a year in secure premises
 - Regular audio conferences (1x/month)
- **Sections**
 - Section on Chemical, Biological and Radio-Nuclear (CBRN) preparedness and response
 - Section on Influenza preparedness and response
 - Section on Generic Preparedness and response to health emergencies
- **Ad hoc working groups, expert groups and networks**
 - Ad hoc WG on chemical
 - Ad hoc WG on radiological/nuclear threats
 - Ad hoc drafting group for Technical guidance document on GPP
 - Ad hoc WG on SOPs and minimal requirements for crisis management tools
 - Communicators network

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EAR: The Early Alerting and Reporting Project of the Global Health Security Initiative

Participating medical intelligence systems



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EAR: users



ROBERT KOCH INSTITUT



Ministry of Health, Labour and Welfare



厚生労働省



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